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Technical Information Report 33.4.1.3

ANTITANK MINE, XM34 (U)

Interim Report

October 1967

ARMY MATERIEL COMMAND

Prepared by the University of Pittsburgh Research Staff, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036, under Contract DA-49-186-AMC-214(D)

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SUMMARY

(U) This report traces the development of the XM34 antitank mine, which is designed to immobilize enemy armored vehicles. Because it can be air-dropped, it is useful for antitank mining in areas hitherto inaccessible.

RELATED TIR'S

7-66	TIR 18.2.1.11	Aircraft Mine-Dispersing Subsystem, XM47
10-67	TIR 33.4.1.2(2)	Aircraft Mine-Dispersing Subsystem, XM56
7-64	TIR 33.4.2.2	Antipersonnel Mine, XM27
6-65	TIR 33.4.4.1	Antitank Mine Fuze, XM608 Series
1-66	TIR 33.4.5.1	Antipersonnel Mine Dispenser, XM3
2-62	TIR 4-3-1A9(1)	Antipersonnel Mine, XM22

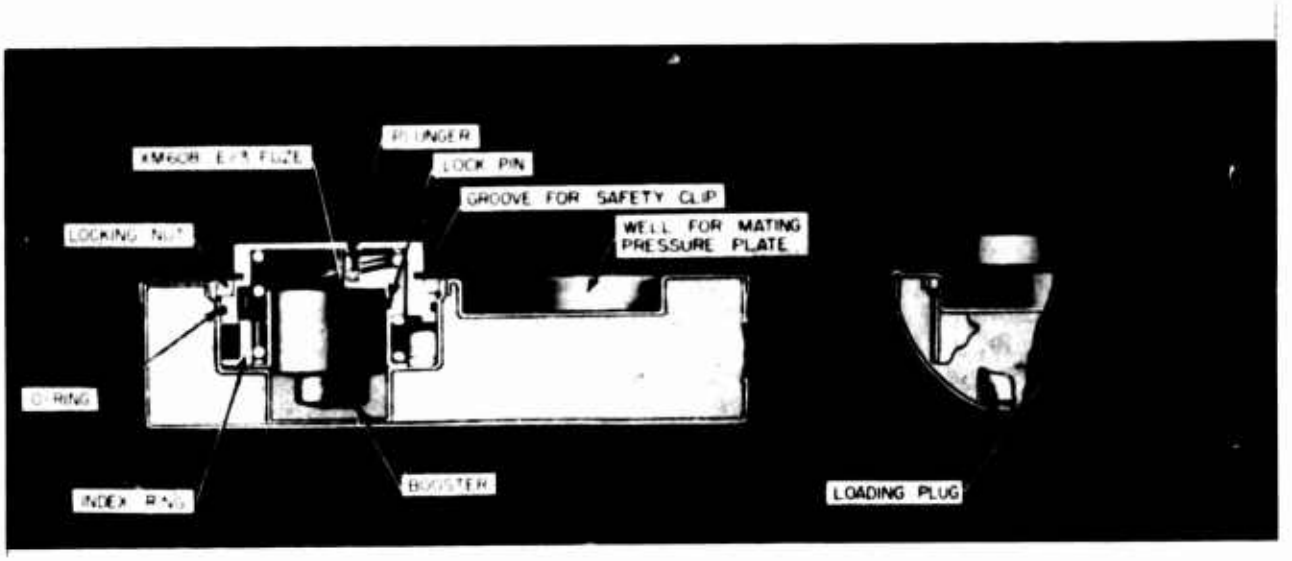
ANTITANK MINE, XM34 (U)

(C) The XM34 antitank mine is a blast-type mine that causes immobilization (M-kill) of the target vehicle. The XM34 is designed for use in the XM56 aircraft mine-dispersing subsystem and can be dispersed aerially, from ground vehicles, or manually. The other major item of the subsystem is the SUU-13/A antitank mine dispenser. Because it can be air-dropped, the XM34 is useful for antitank mining in areas hitherto inaccessible. The major parts of the mine assembly are a body, a pressure plate with integral fuze, and H6 explosive.

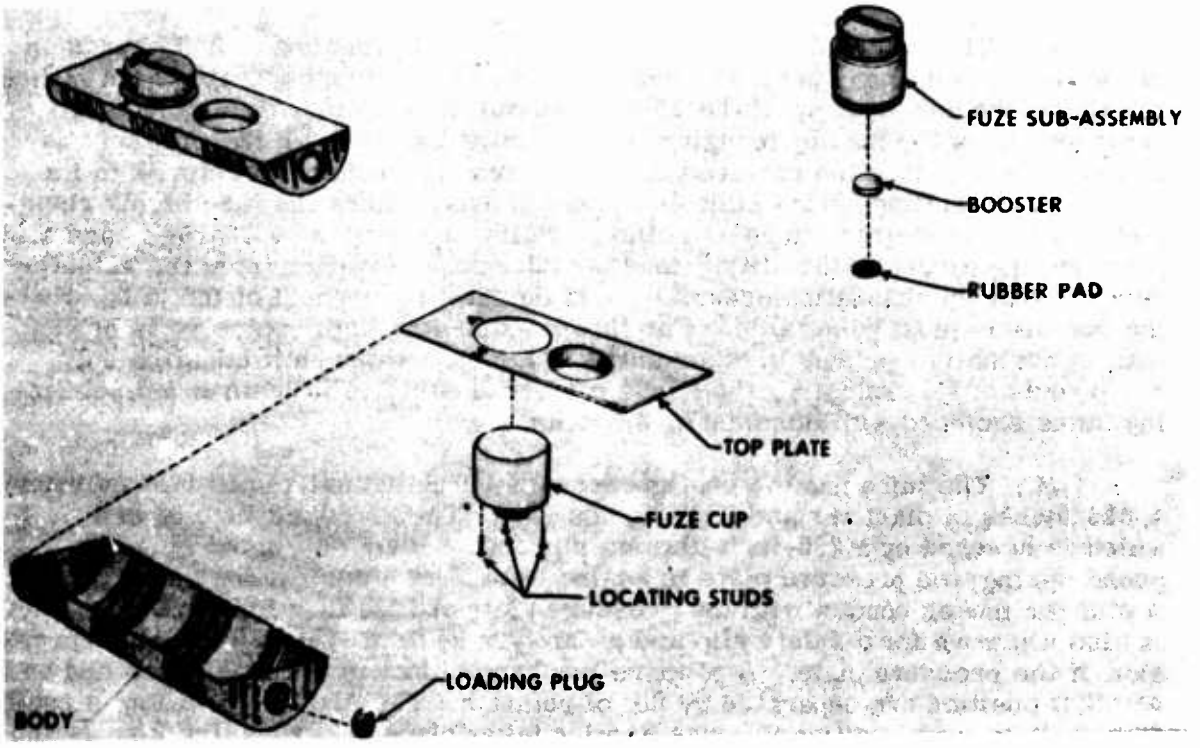
(C) This antitank mine is suited to being sown in mixed minefields with antipersonnel mines against both armor and infantry attack. Aerial and vehicular means of sowing enable a commander to pick the best placement zones to suit his tactical needs and delay emplacement of the mines until the last possible moment to surprise the enemy. The XM34 is highly countermeasure resistant and difficult to defeat.

(C) The mine fuze is actuated by a sustained pressure of 250 pounds on its pressure plate for a period of 350 milliseconds. Its firing train is out of line, and therefore unarmed, until the correct sustained pressure simultaneously arms and fires the fuze by bringing the detonator into line. If the pressure is released in less than the required time, the arming mechanism returns to its original zero setting. This built-in actuation delay makes the fuze highly resistant to such countermeasures as rollers, flails, and explosive charges, and also provides the airdrop capability. Another advantage resulting from the actuation delay is that the detonation occurs beyond the first road wheel of the tank, where the vehicle is most vulnerable. For this reason, less high explosive is needed than is normally required in other antitank mines. Although it contains only 3.5 pounds of H6 explosive, the XM34 mine was effective in tests in immobilizing tanks equipped with Russian JS-3 tracks.

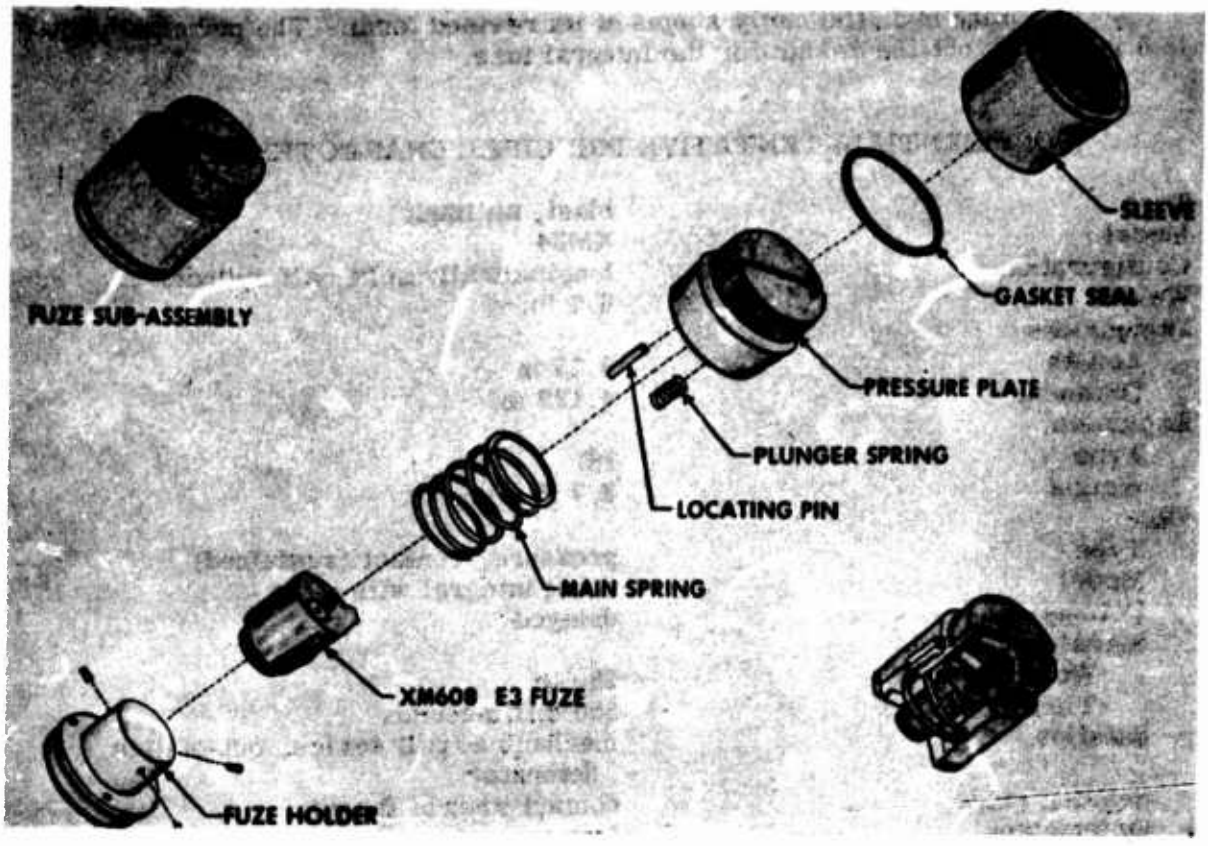
(C) The mine has the configuration of a longitudinally split half cylinder 4.625 inches in diameter and 9.75 inches long. The XM608E3 fuze is in a well, which is covered by a 2.5-inch-diameter pressure plate supported by a 250-pound spring; the pressure plate is sealed to protect it against the environment. A plunger makes contact with the pressure plate and the fuze input piston. There is also a groove for a safety clip and a safety yoke to prevent accidental depression of the pressure plate. A positive mechanical lockup SAFE position and an ARMED position are separated by 90° of rotation. The ARMED position is really a commit-to-arm position because arming takes place only when the fuze is subjected to the necessary actuating pressure for the required time. This standard arming method is used whether the mines are emplaced by hand, from a surface vehicle, or from an aircraft. Each mine has a cavity to accomodate the pressure



(CONFIDENTIAL) CROSS SECTION OF XM34 MINE (U)



(CONFIDENTIAL) XM34 MINE ASSEMBLY (U)



(CONFIDENTIAL) XM608E3 FUZE SUBASSEMBLY (U)

plate of another mine, thereby making it possible to nest two mines together to form a cylindrical storage unit within each tube. The mines are then bore safe and completely protected from accidental detonation until ejected from the dispenser tube because the fuzes are not exposed. The case and other components of the mine are made of steel and aluminum; because of the structural soundness of its case, the mine will not be damaged when it hits the ground after being air-dropped, nor will it function when a vehicle passes over part of the mine but does not contact the pressure plate. A self-sterilization, or self-destruction, feature functioning in 8 to 10 hours is being considered for the XM34.

(C) Dummy mines and a limited number of XM34 mines have been dropped from aircraft in tests. The fuzed mines showed little or no damage and inert mines survived impact with the ground. None of the XM608E3 fuzes (the XM608E3 is to be replaced by a new, integral fuze) functioned accidentally upon impact and all fuzes operated properly when deliberately actuated later. A limited number of tests, made by running an M48 tank equipped with US and Russian tracks over test mines, indicated a 90% functioning reliability. Mines have also been dispensed from the air into satisfactory patterns.

The mine is in the early stages of its revised form. The principal problem is to work out the design for the integral fuze.

(CONFIDENTIAL) TENTATIVE PRINCIPAL CHARACTERISTICS (U)

Type	blast, antitank
Model	XM34
Configuration	longitudinally split half cylinder
Weight	6.7 lb
Dimensions	
Length	9.75 in
Diameter	4.625 in
Explosive	
Type	H6
Weight	3.7 lb
Fuze	
Type	pressure, contact (sustained)
Model	none; integral with mine
Detonation	delayed
Signature	
Weight	250 lb
Time sustained	350 milliseconds
Safeties	mechanical pull device, out-of-line detonator
Sensing range	contact area of target
Orientation	fuze up or fuze down
Self-neutralization	self-destruct module, 8 to 10 hours being considered
Countermeasure resistance	blast, roller, and flail resistant
Emplacement	surface, by ground vehicle, aircraft, or manual means
Lethality	M-kill
Storage	2 mines per tube, 80 mines per dispenser

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
*Mines (ordnance), *Air-dropped mines, *Antitank mines, Antipersonnel mines, Mine components, Mine fuzes, Antitank mine-dispensing subsystems, SUU-13/A dispenser, XM3 antipersonnel mine dispenser, XM606E3 fuze, Standard Army aircraft, Fixed-wing aircraft, Rotary wing aircraft, XM56 aircraft mine-dispersing subsystem (U)						

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11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY Research & Development Directorate Army Materiel Command

13. ABSTRACT

This report traces the development of the XM34 antitank mine, which is designed to immobilize enemy armored vehicles. Emplacement can be done manually, from ground vehicles, and from aircraft. Because it can be air-dropped, it is useful for antitank mining in areas hitherto inaccessible. By sowing the XM34 simultaneously with suitable antipersonnel mines, a mine field can be established, excluding both enemy infantry and armor. (U)

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